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10/563,636

03/14/2008

David Wollan

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EXAMINER

STULII, VERA

ART UNIT

PAPER NUMBER

1781

MAIL DATE

DELIVERY MODE

08/16/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                      |  |
|------------------------------|--------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/563,636 | <b>Applicant(s)</b><br>WOLLAN, DAVID |  |
|                              | <b>Examiner</b><br>VERA STULII       | <b>Art Unit</b><br>1781              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 6-8, 10-17, 19, 30 and 33-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-8, 10-17, 19, 30 and 33-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/14/2011</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**Claims 6, 10-12, 15-17, 19, 30, 33-35 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen (WO 92/08783) in view of Michaels (WO 93/22036).**

Nielsen discloses dealcoholization of a naturally fermented beverage comprising:

A) optionally, contacting the beverage with a microfiltration membrane, to obtain a permeate and a retentate with, respectively, lower and higher concentrations of high molecular weight turbidity causing compounds; B) optionally, contacting beverage or the microfiltration permeate with a nanofiltration membrane, to obtain a permeate and a retentate with, respectively, lower and higher concentrations of aroma and flavor containing compounds, C) contacting the microfiltration permeate or the nanofiltration permeate with a reverse osmosis membrane, which selectively permeates ethanol and selectively retains aroma and flavor containing compounds, to obtain a permeate and a retentate with, respectively, higher and lower concentrations of ethanol, and lower and higher concentrations of aroma and flavor containing compounds (Abstract). Thus, Nielsen discloses two or three step membrane process for the removal of alcohol from naturally fermented beverage products(page 1 lines 1-5). Nielsen also discloses that “it is desirable to produce low alcohol or non-alcoholic beer and wine, and yet retain the flavor taste of such beer and wine” (page 1 lines 20-25).

More specifically, in regard to claims 6 and 35, Nielsen discloses the method of reducing the alcohol content of an alcohol containing beverage including the steps of:

B. contacting a nanofiltration feed stream comprising a naturally fermented beverage or the microfiltration permeate stream with a nanofiltration membrane, having a molecular weight cutoff of from 100 to 10,000, under conditions such that the nanofiltration feed stream is separated into an nanofiltration permeate stream which has a lower concentration of aroma and flavor containing compounds, and an nanofiltration retentate stream which has a higher concentration of aroma and flavor containing compounds as compared to the nanofiltration feed stream;

C. contacting a reverse osmosis feed stream comprising the microfiltration permeate or the nanofiltration permeate with a reverse osmosis membrane, which selectively permeates ethanol and selectively retains aroma and flavor containing compounds under conditions, such that the reverse osmosis feed stream is separated into a reverse osmosis permeate stream which is higher in ethanol concentration and lower in aroma and flavor containing compounds, and a retentate stream which is lower in ethanol concentration and higher in aroma and flavor containing compounds, as compared to the reverse osmosis feed stream; characterized in that, either or both of steps

A. or B. must be performed, and if step B is performed the reverse osmosis retentate and the nanofiltration retentate are recombined subsequent to step C (page 7 bottom paragraph-page 8 paragraphs 1-3).

Nielsen does not disclose forming dealcoholized permeate by contacting a first side of a hydrophobic microporous membrane with said raw permeate and contacting a second side of the membrane with a strip solution to extract alcohol therefrom to form a dealcoholised permeate. Michaels discloses a process for reducing the alcohol content of an aqueous mixture comprising the steps of:

(a) contacting one surface of a microporous hydrophobic membrane with the aqueous mixture;

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(b) contacting the other surface of the membrane with water or a dilute aqueous saline solution. Therefore, Michaels discloses forming dealcoholized permeate by contacting a first side of a hydrophobic microporous membrane with said raw permeate and contacting a second side of the membrane with a strip solution to extract alcohol therefrom to form a dealcoholised permeate.

Since Nielsen discloses dealcoholization of a naturally fermented beverage, where nanofiltration permeate is contacted with reverse osmosis membrane to form the first solution containing aroma and flavor with lower alcohol content and a second solution with higher alcohol content, and Michaels discloses reduction of alcohol content by (a) contacting one surface of a microporous hydrophobic membrane with the aqueous mixture; and (b) contacting the other surface of the membrane with water or a dilute aqueous saline solution, one of ordinary skill in the art would have been motivated to modify Nielsen in view of Michaels and to substitute step (C) disclosed by Nielsen with steps (a) and (b) disclosed by Michaels for the same purpose and function, i.e. in order to form dealcoholized solution with high aroma and flavor content and another solution with high alcohol content. One of ordinary skill in the art would have been motivated to do so, since both references disclose forming the first solution containing aroma and flavor with lower alcohol content and a second solution with higher alcohol content. One of ordinary skill in the art would have been motivated to do so, since both references disclose similar methods of removal of alcohol from the naturally fermented beverage.

In regard to claim 10, Nielsen discloses wine which has higher concentration of flavor and aroma (page 8 paragraph 1). One of ordinary skill in the art would have been motivated to select membrane parameters that would lead to a maximum amount of volatile components (flavor and aroma) in order to produce a lower alcohol beverage while still retaining the aroma and flavor of the original beverage as disclosed by Nielsen (page 1 bottom paragraph).

In regard to claim 11, Nielsen discloses treatment of wine (page 9 paragraph 3). Michaels also discloses treatment of wine (page 7 Example 3).

In regard to claims 12 and 39, Michaels discloses that strip solution is water or aqueous solution.

In regard to claims 15-17, Nielsen and Michaels do not disclose specific alcohol content of the dealcoholized fractions. Since both Nielsen and Michaels disclose reduction of an alcoholic content of the fermented beverages by forming dealcoholized fractions, and Michaels discloses that rates of transfer through the membrane alcohol and flavors/fragrances vary through manipulations of the extracting solution (stripping solution), one of ordinary skill in the art would have been motivated to adjust membrane parameters and to manipulate extracting solution as taught by Michaels, in order to achieve desired level of alcohol removal and flavors/fragrances transfer.

In regard to claim 19, Nielsen and Michaels do not disclose determining if the alcohol content of the dealcoholised beverage is at or below a predetermined level and continuing to perform removal of alcohol from the beverage while the alcohol content of the dealcoholised beverage is above said predetermined level. In any case, one of

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ordinary skill in the art would have been motivated to verify the alcohol content of the low alcohol beverage and to further performed method steps as taught by Nielsen and Michaels until the desired alcohol content of the fermented beverage is reached.

In regard to claim 30, combination of Nielsen and Michaels discloses the method as claimed in claim 6, and therefore disclose the beverage made by such method.

In regard to claims 33 and 34, Nielsen discloses that “A. or B. must be performed, and if step B is performed the reverse osmosis retentate and the nanofiltration retentate are recombined subsequent to step C” (page 7 bottom paragraph-page 8 paragraphs 1-3). Nielsen further discloses “[t]hereafter, the retentate from the nanofiltration membrane, and the retentate from the reverse osmosis process are recombined, optionally with water, to prepare a reconstituted naturally fermented beverage which contains substantially all of the aroma and flavor containing compounds, with a significantly lower concentration of an ethanol therein” (page 13 top paragraph). Therefore, Nielsen discloses mixing of two fraction resulting from two separate membrane process to obtain dealcoholized beverage as claimed. It would have been obvious to return the mixture in the container with the processed beverage.

**Claims 7, 8, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen (WO 92/08783) in view of Michaels (WO 93/22036) as applied to claim 6 above, and further in view of Zhang et al (6,586,638).**

In regard to claims 7 and 8, Nielsen and Michaels do not disclose heating the strip solution to a temperature which is higher than that of the beverage prior to contacting the strip solution with the membrane.

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Zhang discloses process for removing and recovering one or more unassociated phenolic compounds dissolved in aqueous fluid (Abstract). Zhang discloses “the aqueous fluid and/or the alkaline stripping solution of the present invention may be heated before or during contact with the membrane. The aqueous fluid and/or the alkaline stripping solution of the present invention may have a temperature above room temperature (25°C). This may increase the rate of mass transfer across the non-porous membrane” (Col. 8 bottom paragraph -Col. 9 top paragraph) .

One of ordinary skill in the art would have been motivated to modify Nielsen and Michaels in view of Zhang and to heat the strip solution to a temperature which is higher than that of the beverage prior to contacting the strip solution with the membrane for the benefits as disclosed by Zhang. One of ordinary skill in the art would have been motivated to do so, since Zhang discloses heating stripping solution in order to increase the rate of mass transfer across the membrane.

In regard to claim 37, it is noted that it would have been obvious to cool dealcoholised permeate prior to returning it to the wine tank, so the temperature of the wine in the tank would not experience significant increase. One of ordinary skill in the art would have been motivated to keep the wine in the tank at a room temperature or below, since this temperature range is optimal for the wine storage and stability

**Claims 13, 14 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen (WO 92/08783) in view of Michaels (WO 93/22036) as applied to claim 6 above, and further in view of Zhang et al (6,586,638) in view of Tonelli et al (5,997,745).**



In regard to claims 13 and 14, Nielsen and Michaels are silent as to the removal of carbon dioxide and/or oxygen from the water or raw permeate prior to contacting the membrane. Tonelli et al discloses removal of carbon dioxide and other gases from the permeate prior to contacting with membrane in order to produce purified product that does not cause drastic changes in pH (Col. 7 paragraph 4; Col. 12 bottom paragraph). One of ordinary skill in the art would have been motivated to modify Nielsen and Michaels in view of Tonelli et al and to remove carbon dioxide and other gases (including oxygen) from the permeate prior to contacting with membrane in order to produce purified product that does not cause drastic changes in pH as taught by Tonelli et al.

### ***Response to Arguments***

Applicant's arguments filed 02/04/2011 have been fully considered but they are not persuasive.

In response to applicants' arguments regarding Nielsen reference, it is noted that addition of water is optional, and not required by the method disclosed by Nielsen (as shown in the Final office action mailed 10/14/2010). As noted throughout Nielsen reference addition of water is optional and is not required (see at least page 12, lines 26-29 of Nielsen reference). Nielsen discloses different embodiments of the invention, where optional microfiltration step is performed prior to the nanofiltration step and is designed to remove "high molecular turbidity causing compounds" (page 13 lines 22-23). The nanofiltration

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step is not optional in one of the invention embodiments as disclosed by Nielsen (pages 12-13). Further in this regard, it is noted that claims are rejected as being unpatentable over Nielsen (WO 92/08783) in view of Michaels (WO 93/22036). Thus, claims are rejected over the combination of references.

In response to Applicants' arguments that there is no reason to modify Nielsen in view of Michaels, it is noted that Michaels discloses a process for reducing the alcohol content of an aqueous mixture comprising the steps of:

(a) contacting one surface of a microporous hydrophobic membrane with the aqueous mixture;

(b) contacting the other surface of the membrane with water or a dilute aqueous saline solution. Therefore, Michaels discloses forming dealcoholized permeate by contacting a first side of a hydrophobic microporous membrane with said raw permeate and contacting a second side of the membrane with a strip solution to extract alcohol therefrom to form a dealcoholised permeate. Since Nielsen discloses dealcoholization of a naturally fermented beverage, where nanofiltration permeate is contacted with reverse osmosis membrane to form the first solution containing aroma and flavor with lower alcohol content and a second solution with higher alcohol content, and Michaels discloses reduction of alcohol content by (a) contacting one surface of a microporous hydrophobic membrane with the aqueous mixture; and (b) contacting the other surface of the membrane with water or a dilute aqueous saline solution, one of ordinary skill in the art would have been motivated to modify Nielsen in view of Michaels and to substitute step (C) disclosed by Nielsen with steps (a) and (b) disclosed by Michaels for

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the same purpose and function, i.e. in order to form dealcoholized solution with high aroma and flavor content and another solution with high alcohol content. One of ordinary skill in the art would have been motivated to do so, since both references disclose forming the first solution containing aroma and flavor with lower alcohol content and a second solution with higher alcohol content. One of ordinary skill in the art would have been motivated to do so, since both references disclose similar methods of removal of alcohol from the naturally fermented beverage.

In response to Applicants argument regarding secondary consideration, it is noted that such these arguments are not found persuasive for the reasons as stated above. The fact that the invention was recognized by others in the field of the invention does not endow the invention with a patent. Declarant's arguments regarding the combination of references as applied are addressed immediately above.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VERA STULII whose telephone number is (571)272-3221. The examiner can normally be reached on 7:00 am-3:30 pm, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vera Stulii/  
Examiner, Art Unit 1781